

It is claimed:

1. A computer-implemented method for persisting private object state data created within an object development environment, comprising the steps of:

5                   determining the private object state data of objects used within the object development environment;

                  storing the determined private object state data in a computer-readable file, wherein the computer-readable file is in a human-understandable format; and

                  restoring the private object state data by processing the computer-readable  
10 file.

2. The method of claim 1 wherein the human-understandable format is a text-based format.

15 3. The method of claim 1 further comprising the steps of:

                  after storing the determined private object state data in the computer-readable file, modifying the private object state data within the computer-readable file without using the object development environment; and

                  restoring the stored private object state data by processing the computer-  
20 readable file,

                  wherein the restored private object state data contains the modifications to the private object state data.

4. The method of claim 1 further comprising the steps of:

after storing the determined private object state data in the computer-readable file, directly editing the computer-readable file in order to modify the private object state data within the computer-readable file; and

5 restoring the stored private object state data by processing the computer-readable file,

wherein the restored private object state data contains the modifications to the private object state data.

10 5. The method of claim 1 wherein the modifications are to correct errors in object structure without using the object development environment.

15 6. The method of claim 1 wherein an object class that specifies structure of the private object state data has been modified, said modification occurring after the private object state data has been stored in the computer-readable file, said method further comprising the step of:

restoring the private object state data from the computer-readable file even though the object class has been modified.

20 7. The method of claim 1 wherein an object class that is included in the object development environment and that specifies structure of the private object state data has been modified, said modification occurring after the private object state data has been stored in the computer-readable file, said method further comprising the step of:

substantially restoring back into the object development environment the private object state data from the computer-readable file despite the structures differing between the modified class and the private object state data.

5 8. The method of claim 1 further comprising the steps of:

determining public and the private object state data of the objects used within the object development environment;

storing the determined public and private object state data in the computer-readable file; and

10 restoring the private and public object state data by processing the computer-readable file.

9. The method of claim 1 wherein the object development environment is a Java development environment.

15 10. The method of claim 1 wherein the object development environment is a Java development environment for providing graphical user interfaces.

11. The method of claim 1 wherein the computer-readable file is in a structured format  
20 that indicates order in which the private object state data is to be restored.

12. The method of claim 11 further comprising the step of:

restoring the private object state data in the order specified by the structured format of the computer-readable file.

5 13. The method of claim 12 wherein the structured format is an XML structured format.

14. The method of claim 13 wherein the XML structured format includes nested XML blocks to indicate the order in which the private object state data is to be restored.

10 15. The method of claim 1 wherein the computer-readable file is in a structured format that contains the private and public object state data.

16. The method of claim 1 further comprising the step of:

restoring into a different type of object development environment the  
15 private object state data from the computer-readable file.

17. The method of claim 16 wherein the computer-readable file has an XML structure such that the computer-readable file is capable of being imported both into the object development environment and the different type of object development environment.

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18. The method of claim 16 further comprising the step of:

creating Java objects based upon the restored private object state data,  
wherein the Java objects are used within the object development environment.

19. The method of claim 16 further comprising the steps of:

creating Java objects based upon the restored private object state data;

storing the Java objects in an object hashtable; and

5 retrieving a frame based upon the Java objects stored in the object  
hashtable.

20. The method of claim 1 further comprising the steps of:

restoring the private object state data by processing the computer-readable

10 file; and

using the restored private object state data to generate source code.

21. The method of claim 20 further comprising the step of:

using the restored private object state data to generate a different type of

15 source code.

22. The method of claim 1 further comprising the steps of:

(a) determining whether the private object state data of the objects have  
been modified from the initial values given to the objects upon the objects' creation; and

20 (b) storing in the computer-readable file the private object state data that  
has been determined in step (a) to have been modified; and

(c) restoring from the computer-readable file the private object state data  
that has been determined in step (a) to have been modified.

23. The method of claim 1 further comprising the steps of:

determining customization hooks associated with the objects used within  
the object development environment;

storing the customization hooks in the computer-readable file; and

5 restoring the customization hooks by processing the computer-readable  
file.

24. The method of claim 1 further comprising the steps of:

determining design time object state data associated with the objects used

10 within the object development environment;

storing the design time object state data in the computer-readable file; and

restoring the design time object state data by processing the computer-  
readable file,

15 wherein the restored design time object state data is used during design  
time.

25. The method of claim 24 further comprising the steps of:

determining run time object state data associated with the objects used  
within the object development environment;

20 storing the run time object state data in the computer-readable file; and

restoring the run time object state data by processing the computer-  
readable file,

wherein the restored run time object state data is used during run time.

26. A computer-implemented method for persisting public and private object state data created within an object development environment, comprising the steps of:

generating a node tree whose nodes store the public and private object  
5 state data;  
processing the nodes of the node tree to generate nodes in an XML tree,  
wherein the nodes in the XML tree correspond to an XML tag structure; and  
generating XML tags based upon the nodes in the XML tree, wherein the  
XML tags are structured so as to persist the public and private object state data.

10 27. The method of claim 26 further comprising the steps of:

parsing the XML tags to recover the public and private object state data;  
instantiating objects based upon the recovered public and private object  
state data; and  
15 using the instantiated objects within the object development environment.

28. The method of claim 27 wherein the XML tags store design time object state data,  
said method further comprising the steps of:

parsing the XML tags to recover the design time object state data;  
20 instantiating objects based upon the recovered design time object state  
data; and

using the instantiated objects within the object development environment  
such that the recovered design time object state data is used only within the object  
development environment.

5 29. The method of claim 26 further comprising the steps of:

parsing the XML tags to recover the public and private object state data;  
generating source code based upon the recovered public and private object  
state data; and

using the generated source code to perform a computer operation.

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30. The method of claim 26 wherein the public and private object state data comprise  
state data from JavaBeans.

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31. The method of claim 26 wherein the XML tags are structured to store state  
restoration order for restoring objects, said method further comprising the steps of:

parsing the XML tags to recover the public and private object state data;  
instantiating objects in an order based upon the stored state restoration  
order, wherein the instantiating of the object recovers the public and private object state  
data; and

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using the instantiated objects within the object development environment.